

**REMARKS**

**STATUS OF CLAIMS:**

Claims 1-20 are pending in this application after entry of the foregoing amendments. Claims 1, 2, 4, 5 and 7-19 are rejected, and the Examiner objects to claims 3 and 6.

**35 U.S.C. §103:**

Claims 1, 2, 4, 5 and 7-19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hornbeck (U.S. Patent No. 6,323,982 B1) in view of Giebel et al. (U.S. Patent No. 6,206,209 B1 [hereinafter "Giebel"]).

The Examiner acknowledges that claims 3 and 6 are patentable over the applied references. Thus, claim 3 is hereby rewritten in independent form as new claim 20 so as to capture its allowable subject matter. In regard to the application of Hornbeck and Giebel against independent claims 1, 10 and 13, Applicants further elaborate on the lack of motivation to combine the references' teachings hereinbelow.

The present invention is drawn to a uniquely designed micro-mirror device for an image display apparatus, which has a physical configuration such that the claimed mirror is pivoted toward sides of the claimed landing pad. As described in the specification, this results in reduction of optical loss in comparison to the prior art.

Hornbeck discloses a micro-mirror device having mirrors that pivot toward corners of a substrate 304, as shown in Figure 4. The Examiner acknowledges that Hornbeck does not disclose a mirror that is pivoted toward sides of a landing pad. The Examiner cites the bias/reset structure 312 of Hornbeck as being the claimed landing pad. (See page 3, first full paragraph of

the Office Action.) Thus, the Examiner attempts to combine the rotating mirror in Giebel with that of Hornbeck in an effort to teach the claimed invention. However, the Examiner has still not established a *prima facie* case of obviousness in regard to the motivation for combining the references.

The Examiner attempts to support his alleged motivation by noting that Giebel indicates that the disclosed “package scan element is designed for wafer scale assembly, which **significantly reduces device cost**” (column 5, lines 43-45). This assertion fails to present proper grounds for supporting the alleged motivation to combine the references. In particular, the section cited by the Examiner indicates that the “wafer scale assembly” reduces device costs. Thus, one skilled in the art would have been taught to utilize the wafer scale approach for reducing cost, but would not have been taught that a particular direction of rotation of the mirror in Giebel reduces costs. The Examiner’s position is nonsensical.

The Examiner further elaborates on the alleged motivation in the third full paragraph on page 5 of the Office Action. Here, he similarly asserts that one would have been motivated to apply the teachings of Giebel to Hornbeck in order to “inexpensively fabricate” a controlled optical component, such as a mirror. However, this would have, at best, merely taught one to utilize wafer scale assembly in the manufacturing process of Hornbeck. The Examiner has not indicated, nor are we aware of, any sort of connection between (1) wafer scale assembly, and (2) rotating a mirror toward sides of a landing pad in a micro-mirror device.

The Examiner further elaborates on the alleged motivation in the first full paragraph on page 7 of the Office Action. Here the Examiner responds to Applicants’ previous assertion that

there is no disclosed connection between (1) the use of wafer scale assembly to reduce costs, and (2) the manner in which the mirror pivots. In doing so, he alleges that cost reduction is connected to the simplicity of Giebel, which requires less fabrication steps. Again, however, the Examiner's logic fails to support his motivation for combining references. In particular, there is no teaching in Giebel that rotating the mirror toward sides of a landing pad or substrate will require less fabrication steps, in comparison to rotating the mirror as taught by Hornbeck.

In effect, the Examiner is trying to assert that pivoting a mirror toward sides of a landing pad = less fabrication steps = cost reduction. It may be acknowledged that reducing fabrication steps could lead to a cost reduction; however, there is no disclosure in Giebel that would have taught one that a particular direction of rotation of the mirror results in less fabrication steps.

*Claim 2*

Claim 2 describes that the pair of base electrodes has a protruding portion that protrudes inward to widen an area that faces the girder. Claim 2 is hereby amended to recite that a longest side of the base electrode is parallel to a side of the mirror, thereby preventing the Examiner from applying the alleged base electrode 310 of Hornbeck against the features of claim 2, because a longest side of element 310 is not parallel to a side of the mirror. Thus, Applicants respectfully submit that the combination of these references fails to disclose this feature.

*Claim 9*

Claim 9 recites that the micro-mirror device is pivoted around an axis that is parallel to a lengthwise direction of the pair of base electrodes. In an effort to teach this feature, the Examiner turns to Figures 4 and 5 of Hornbeck and cites items 310 and 102. The Examiner

appears to be relying on the fact that the alleged base electrode 310 of Hornbeck has various sides that may be interpreted as being parallel to the rotational axis of the mirror 102. Claim 9 is hereby amended to recite that the lengthwise direction is parallel to a side of the mirror. Applicants respectfully submit that there is no side of the mirror 102 in Hornbeck that is parallel to a lengthwise side of the alleged base electrode 310, when the lengthwise side is parallel to the axis around which the mirror pivots.

*Claims 14 and 15*

In an effort to teach the features of claims 14 and 15, the Examiner turns to Figure 5 of Giebel and alleges that a pair of base electrodes is taught that opposes each other in a non-diagonal manner with respect to the mirror. However, Applicants respectfully remind the Examiner that his ground of rejection of independent claim 1 relies on the base electrodes of Hornbeck (see page 2, line 8 of the Office Action), and Giebel is relied on for the alleged teaching of rotating a mirror toward a side of a landing pad. Thus, the Examiner's rejection is not consistent and it is improper for the Examiner to merely pick and choose elements without adherence to his original basis for the rejection, which utilizes Hornbeck for the alleged base electrodes. Thus, the Examiner is respectfully requested to (1) indicate that claims 14 and 15 are allowed, or (2) set forth a consistent rejection that utilizes the electrodes of either Giebel or Hornbeck, but not both.

*Claims 16 and 18*

Claims 16 and 18 were added in the previous Amendment to further define the girder and the spring members. These claims describe a relationship between the spring member and the

girder where each spring member respectively has an end in connection with one of the recited first posts. The Examiner attempts to address claims 16 and 18 in the third full paragraph of page 6; however, the Examiner does not assert where Hornbeck discloses a girder that includes a pair of spring members, or where the spring members respectively have an end in connection with one of the recited first posts. Instead, the Examiner points to the landing tips 128. However, these are merely protrusions from the side of element 114; they are not disclosed as being in connection with any of the first posts. Claims 16 and 18 are amended to expressly recite landing tips. The recited landing tips are separate elements from the recited spring members, and Hornbeck fails to disclose these features.

*Claims 17 and 19*

Claims 17 and 19 were also added in the previous Amendment to further define the girder as including a pair of spring members and to define the axis of rotation of the mirror. The Examiner again appears to be relying on elements 128 in an effort to disclose the claimed spring members. (See third full paragraph of page 6.) Claims 17 and 19 are amended to further define that the spring members connect the girder to the pair of first posts. Applicants respectfully submit that elements 128 of Hornbeck fail to disclose the claimed spring members because they do not connect the alleged girder 114 to the pair of first posts 116, and because the mirror does not have an axis of rotation which is perpendicular to a lengthwise direction of the spring members.

*New Claim 20*

Again, new claim 20 is original claim 3 rewritten in independent form to capture allowable subject matter.

**REQUEST INTERVIEW:**

**Applicants desire to conduct an interview with the Examiner after filing this Amendment. Accordingly, the Examiner is respectfully requested to contact the undersigned attorney in order to schedule a mutually convenient date and time to conduct such interview.**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. SERIAL NO. 09/725,959

ART UNIT 2673  
Q61266

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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**23373**

CUSTOMER NUMBER

Date: January 2, 2004